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*Performance-Related Pay or Pay for Participation ?  
Forms of Agreement and Determinants:  
Evidence from Companies in Emilia-Romagna*

**Giulio Cainelli, Roberto Fabbri and Paolo Pini**



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**Performance-Related Pay or Pay for Participation ?  
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Evidence from Companies in Emilia-Romagna<sup>∇</sup>**  
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*Abstract*

Since the July 1993 agreement, the adoption of company agreements based on a link between compensation and company performance has spread, becoming quite significant a presence even at the local level, without, however, involving companies overall where collective bargaining takes place. Consequently, studies of bonuses have recently been addressed to the examination of this phenomenon also for firms located in specific geographical areas, not just with reference to a sample of them, in general of medium-large size, at the national level. In this study, company bargaining on performance-related pay [PRP] and/or pay for participation [PFP] is examined in the years 1994-1997 in Emilia-Romagna. First of all, forms of agreement on PRP/PFP are analysed to find out the *incentive, risk-sharing and participation mechanisms* suggested by economic theory and embodied within each contract. Secondly, an econometric analysis is carried out on the factors behind the introduction of PRP/PFP, and of the various forms it takes in practice.

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## 0. Introduction

Since the national agreement of July 1993 the adoption of company agreements linking compensation and company performance has spread to a significant extent also in local systems, without however involving all companies where bargaining with trade unions is carried out. In fact, the framework itself of the July 1993 agreement fostered a *decentralising* tendency to the economic side of bargaining, linking the increase in the purchasing power of compensations to company performance

The aim of this paper is to analyse decentralised bargaining carried out in Emilia-Romagna in the period 1994-1997, focusing especially on the introduction of PFP/PRP. The analysis of these forms of agreement aims at finding out the rationale suggested by economic theory, i.e. *incentives*, *risk sharing* and *participation*. This analysis is followed by an econometric investigation aimed primarily at the identification of the main determinants, as well as the various forms it takes.

## 1. The database on bargaining activity

Our analysis is based on the company agreements contained in the database of IRES Emilia-Romagna, referred to from now on as *IRES*. This organisation collects all the second level agreements in the Emilia-Romagna region signed by companies and union representatives at the company level, in the great majority of cases with the active intervention of the relevant sector union organisations. The agreements included in the database mainly concern bargaining carried out in private sectors of the economy, whereas the agreements in the public sector are excluded.

From the analysis of the database *IRES*<sup>1</sup> it can be seen that the decentralised bargaining in the period 1994-1997 involved 2200 companies, accounting for around 250.000 employees (IRES Emilia-Romagna, 1999), with the signing of a little under 3000 company agreements. Overall, companies where bargaining involved subjects relating to local/company clauses integrating national agreements, or local management of national agreements (LCIMs), were roughly 1500 (68% of the total), for a number of employees not much under 200.000 (80% of the total)<sup>2</sup>.

## 2. Characteristics of decentralised bargaining

We shall first of all be examining some of the general characteristics of company bargaining carried out by firms in Emilia-Romagna in the period 1994-1997, identified by examining 1782 LCIMs involving 1475 companies and about 200.000 employees (table 1).

### 2.1 Bargaining for companies overall

In the first place, there are some subjects dealt with in negotiations that significantly help to determine the climate in the company, and the industrial relations within it. Among these will certainly figure the overall amount and quality of *information* that is periodically released to the representative organisations of the workers. In particular, there are those concerning the work organisation and the running of the working-time schedules, investment projects and plans about restructuring, of technological and organisational change, policies about hiring new staff, mobility and dismissal, ownership structure, and the trends in the product market. It is remarkable that nearly 67% of companies foresee structured forms of information provision, thus providing a favourable basis for a climate of confidence within the company and “good” industrial relations. The companies in which, however, no structured informational channel is foreseen in the agreement are 489 out of 1475 (equal to 33% of the total). A much less favourable result emerges, on the other hand, from the examination of two other

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<sup>1</sup> The analysis of the database was carried out on the version brought up to date on October 30<sup>th</sup>. 1998.

<sup>2</sup> The agreements that had as their object non-defensive themes (compensations and otherwise) are 61% of the total. Of the latter, those considered in our analysis for reasons of the comprehensiveness of the agreement are 1782 (60% of the total of agreements, and 97% of the LCIMs. They involved 1475 companies (with 1,2 agreements per company), equal therefore to almost all the companies in which LCIMs bargaining was carried out, and to little more than 67% of the total companies in which there was bargaining in the period surveyed.

mechanisms of a participatory and informational type: the presence of *joint councils*<sup>3</sup> and the transmission to the unions of the *company balance sheet*. Only of 16% of companies can it be said that joint councils are set up, and only in 7% is the delivery of the company balance sheet foreseen, or some sections of it. This latter data seems rather significant, especially when one thinks of it in relation to the much-recommended involvement of workers through PRP/PFP compensation mechanisms based on company performance.

Secondly, other important aspects that contribute to a climate of participation are the negotiation on the *work organisation* and the *working hours*, areas traditionally reserved to union action. While almost half the agreements are specifically directed at working schedules (for 709 companies out of a total of 1475), only 23% concerns the organisation of work (for 341 companies out of 1475)<sup>4</sup>. There would seem, therefore, to be a substantial negotiation deficit on a subject that has always been an important moment in agreement practices, whose relevance increases if connected to the changes that have occurred in compensation mechanisms. To this not particularly positive data for union politics, and perhaps not even for that of company management, should be added a substantially negative finding on another important aspect of company bargaining; the significance implicitly attributed to the *training* of the workers in the workplace. Only 19% of companies foresee negotiated commitments on the training, or retraining of employees, and in the majority of cases the formula used is very general, without precise indications. It can be summed up in a vaguely general “commitment to the *on the job-training* (OnJT) and *out of the job-training* (OutJT) of the workers”<sup>5</sup>.

Thirdly, a statistic related to the bargaining on economic subjects appears to us worthy of notice. Out of the total of agreements examined, a good 60% concerns PRP/PFP, and if one considers the companies involved in the LCIMs bargaining, it can be seen that a good 63% has made agreements on PRP/PFP mechanisms<sup>6</sup>. The extent of the PRP/PFP phenomenon is hence remarkable, involving 935 companies out of 1475.

Despite this, the influence of bargaining of a traditional kind on economic matters has remained important in the companies analysed. In particular, there is a high proportion of companies with agreements envisaging compensation increases conceded through the traditional *production bonus*<sup>7</sup> and the *lump sum bonus*<sup>8</sup>, forms found respectively in 31% and in 27% of companies. Also significant is the weight of the compensation increases given in the form of the *super minimum*<sup>9</sup> and *structural company compensation*<sup>10</sup>, with shares respectively of 7% and 12% of companies. In addition, there are a large number of companies where traditional forms co-exist side by side with innovative compensation mechanisms: among the 935 companies with agreements on PRP/PFP, a good 87 companies (equal to 9% of the total), can be seen to have agreed to compensation increases in the form of structural company compensation, 249 companies (27%) with compensation increases in the form of production bonus, 53 companies (6%) through increases in the super minimum, and 268 companies (29%) with the concession of lump sum bonuses.

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<sup>3</sup> i.e. is bilateral technical committees corresponding to joint councils.

<sup>4</sup> In particular, in relation to changes of an organisational nature and to the introduction of technological innovation.

<sup>5</sup> The negotiated commitment, when present, is of a substantially generic kind and formulated in terms of a “general principal” (for 15% of companies), rather than with specific and defined forms (3,5% of companies). In addition, some specific typologies are negotiated in very rare cases: on the job-training and retraining programs linked to changes in work organisation are envisaged only in 2% of companies, commitments to study-work programs out of the job in 0,2%, and training plans in relation to the introduction of PRP/PFP compensation mechanisms linked to company performance are indicated in 0,5% of companies.

<sup>6</sup> It should be noted that such a percentage diminishes to around 40% if all the 2200 companies involved in the bargaining are considered.

<sup>7</sup> i.e. “premio di produzione”, an item of the company compensation of the worker.

<sup>8</sup> i.e. “una tantum”: among the lump sum bonuses should be counted all the compensation increases given in reversible form, and hence that do not affect the structural component of the employees compensation at the company level.

<sup>9</sup> In the contracts called formally “superminimo”, another item of the company compensation of the worker.

<sup>10</sup> We have included in this latter form all the compensation forms - different from the production bonus, super minimum and lump sum bonus - that affect the proportion of the company compensation of the worker, with the exception of the travelling allowance, canteen allowance, and those of a job’s duties, accident, sickness, shift, payment in kind, and seniority pay. Among the forms included figure: company compensation (“salario aziendale”), “third element” (“terzo elemento”, a separate item of the compensation); and structural productivity bonus (“premio di produttività strutturale”), if not variable.

The statistics on the extent of PRP/PFP mechanisms should certainly be appreciated, without however failing to point out the substantial presence of forms of bargaining on economic matters (compensation above all) of an extremely traditional kind, not linked explicitly to the performance of the company. This does not imply, however, that a share of the compensation increases given through traditional mechanisms is not linked to a company's *ability to pay*: the compensation increases of a lump sum bonus type are of a reversible kind, and generally do not envisage consolidation, that does, however, remain the object of bargaining in the later phase.

## **2.2 Characteristics of the company bargaining with PRP/PFP and without PRP/PFP**

On distinguishing between companies that have introduced PRP/PFP and those that have not, some significant differences emerge. The "quality" of the bargaining appears to be clearly superior if PRP/PFP is also taken into consideration (table 1).

With reference to the matters that contribute to determine the company climate and industrial relations, it can be seen that while the *information* provided for the workers' representatives is envisaged in 49% of the companies without PRP/PFP, these appear in 77% of the companies with PRP/PFP. Similar results emerge for the presence of the *bilateral technical commission*: this joint council turns out to be present in 24% of the companies with PRP/PFP and only in 3% of those without PRP/PFP. Also for the availability of the *company balance sheet*, similar results emerge; it can be seen that this is provided in 10% of the companies with PRP/PFP and only in 2% of those without.

Other aspects examined concern the bargaining on *work organisation*, *working hours* and *training*. While as far as the organisation of work goes, a significant difference seems to emerge between companies with and without PRP/PFP, in favour of the former, with reference to the subject of working time schedule, the behaviour appears to be identical in the two groups. Results favourable to the companies with PRP/PFP emerge when the subject of training is considered. Company commitments concerning workers' training are relatively widespread in those with PRP/PFP: 25% of the companies with PRP/PFP envisage training as opposed to 9% of companies without, even if the weight of a purely generic commitment appears relatively greater compared to an actual specific commitment in the companies with PRP/PFP.

Still more interesting are the differences concerning the bargaining on economic issues. The bargaining carried out on the items *structural company compensation*, *production bonus*, and *super minimum* is characteristic of companies without PRP/PFP, although a significant presence should be noted also in the companies with PRP/PFP<sup>11</sup>. This result should not be too surprising: when innovative bargaining forms on compensation are present, the importance of compensation increases through forms of a more traditional type is reduced. If, however, the *lump sum bonus* is focused upon as a traditional tool to carry out compensation increases, we notice different results. Companies with PRP/PFP adopt these forms more commonly than companies without (in 29% of cases as against 25%, respectively). So it turns out that companies that introduce PRP/PFP have a significantly slighter propensity to concede structural compensation increases of an *irreversible* type in fixed amounts, but at the same time they have a greater propensity to concede *reversible* compensation increases, still in fixed amounts, probably in compensation for the introduction of flexible compensation mechanisms. If this result is considered at the same time as the one concerning the presence, at any rate significant, of compensation increases in the form of production bonus in the companies with PRP/PFP, a clear trend emerges of making traditional bargaining on economic issues coexist side by side with innovative compensation forms.

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<sup>11</sup> It appears significant that among the companies in which PRP/PFP compensation mechanisms have been introduced, only in 9% and in 6% roughly of cases were compensation increases agreed upon, also in the form of structural company compensation and of super minimum. The proportion of companies with PRP/PFP is higher, in which compensation increases have been agreed upon in the form of production bonus (26% of cases), but the difference from the companies without PRP/PFP remains substantial (37% of cases).

### 2.3 Characteristics of bargaining on PRP: first results

On examining some characteristics of the bargaining that took place on PRP/PFP (table 1), it can be seen that out of a total of 935 companies with PRP/PFP, a proportion equal to 17% introduced PRP/PFP through a *Delay Clause* (putting off the definition of some terms of the agreement to a later date) for the determination of the precise form of regime between compensation and company performance<sup>12</sup>. To this result is also associated the fact that in 9% of companies a compensation increase in the form of an *additional lump sum bonus* was agreed upon connected to the introduction of PRP/PFP, generically recalling the “positive performance” of the company (past or expected) which would permit the awarding of a PRP/PFP bonus anyway.

In addition, this form of additional compensation increase is envisaged often in agreements in which the company is determined expressly to accept the chance of contribution relief (social contribution reductions) envisaged by the measure introduced with the law of 23 May 1997, no.135, without the agreement however envisaging any type of variability in the compensations paid and their connection with profitability, productivity, quality and other indicators of company competitiveness. Forms of this kind, that we have defined for *purposes of social contribution reductions*, are present in 11% of the companies with PRP/PFP. In these cases, we can call these company agreements on PRP/PFP “cosmetic agreements”.

### 3. The bargaining forms of PRP/PFP

In this section we analyse the forms of bargaining of PRP/PFP in the 935 companies that have introduced PRP/PFP compensation mechanisms (table 2)<sup>13</sup>.

With reference to the company size, small companies (1-19 employees) are less willing to enter into agreements of this kind than larger ones. It is significant that a good 38% of companies with agreements of variable compensation have less than 50 employees, which goes to show how widespread PRP/PFP compensation mechanisms became also in smaller companies after July 1993. The reduced number of big companies with PRP/PFP<sup>14</sup> reflects, on the other hand, the small number of big companies in Emilia-Romagna. With reference to the trade union categories, a significant proportion of companies with PRP/PFP can be seen for categories in industrial sectors traditionally rooted in Emilia-Romagna: metalworkers, chemical workers and food industry workers (75% of total companies). Almost irrelevant is the proportion of companies with PRP/PFP for the trade union categories of private services: transport, printing, banking and insurance (8% of all companies).

As far as the analysis of bargaining forms goes, this is carried out using a framework that examines various features of the agreement, with the idea of finding out the various degrees of incentive, risk sharing and participation mechanisms embodied in it<sup>15</sup>.

The examination of indicators utilised is essential to the interpretation of the ways the compensation of the workers is linked to company performance. Following the classification introduced in previous papers<sup>16</sup>, the indicators can be divided up into three groups.

Group I: indicators of company profitability based on data provided by the company balance sheet; these are aimed at finding out the pattern of the economic and financial performance of the firm in the product market<sup>17</sup>.

Group II: indicators of productivity, given by the ratio between the volumes of output, in conformity with defined standards of quality, and the input of labour; with these it is intended to capture the level of productivity of the productive process

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<sup>12</sup> Substantially, finding out indicators linking the PRP/PFP to the production and/or economic results obtained by the company was put off to a second phase.

<sup>13</sup> There were 1080 company agreements on PRP/PFP.

<sup>14</sup> Those with at least 1000 employees are in fact 5% of the total.

<sup>15</sup> In a similar way to what was done in Fabbri - Melotti - Pini (1998), and Fabbri - Pini (1998), and differently by Biagioli - Cardinaleschi (1991) and Cossentino - Prosperetti (1990), or more recently by Prosperetti - Giulivi (1997), Rossi (1997) and Paolucci (1997).

<sup>16</sup> See Melotti - Pini (1996, 1998), Fabbri - Melotti - Pini (1998, 1999), and Fabbri - Pini (1998, 1999).

<sup>17</sup> In this category all the indicators were inserted for which the connection with an item of the company balance sheet turned out to be particularly significant.

Group III: indicators of efficacy and efficiency of the productive processes and the services produced; with these it is intended to stress the degree of efficacy and efficiency of the processes realised with the significant support of human resources.

Such a classification allows us to make a distinction between PRP/PFP mechanisms based on a greater propensity to the employment of variables connected to motivations of “risk sharing” and of “incentives” of a traditional type (with the use of indicators of group I and II), and that based on a greater propensity towards “participation”, for which, still for the purpose of incentives, indicators of group III<sup>18</sup> are used. As recorded in another work (Fabbri - Melotti - Pini, 1999), the dividing up adopted in the three groups present different kinds of analogy compared to the divisions suggested by Leoni - Tiraboschi - Valietti (1998), who adopted a valuable distinction between *output-oriented* PRP mechanism and *input-oriented* PFP mechanism<sup>19</sup>.

Our analysis, in addition, examined a series of further characteristics of the agreements, of fundamental importance for the evaluation of the different relevance of incentive, risk sharing and participation mechanisms, envisaged in the bargaining<sup>20</sup>.

This information is then utilised to construct synthetic indexes allowing us to find out the various aims of the PRP/PFP mechanisms.

### **3.1 Analysis of the indicators employed**

One important result lies in the reduced use of indicators of efficacy and efficiency (9%), compared to high utilisation of traditional indicators of productivity (57%) and a quite significant employment of profitability indicators (33%) (table 3). There thus seem to be less indicators associated with PFP mechanisms in the companies in which bonuses have been introduced recently; this result shows the clear preference for traditional incentive forms and for risk sharing.

There are however significant differences between trade union categories, the size of the company and the territorial areas (local systems) in the utilisation of the indicators.

Taking the trade union categories first, it can be seen that the indicators of group I (of profitability) are especially adopted in the companies of private services<sup>21</sup> and turn out to be relatively widespread also in those companies whose reference agreement is signed by some of the trade union categories of the industry<sup>22</sup>. The indicators of group II (of productivity) are on the other hand extremely widespread in the industrial companies whose agreements have been signed by the categories of chemical workers, building workers, food industry workers and printers.) Finally, the indicators of group III (efficacy and efficiency), are present in a relatively significant proportion in the metalworkers' agreements, and to a lesser extent, the food industry trade union category, the workers in commerce, the chemical workers and textile workers.

From the distribution of the indicators by size of company strongly specific data do not emerge, as least not to the extent of the previous case. This shows the limited importance of this factor in the determination of the indicator that links the variable compensation to company performance<sup>23</sup>. The size of the firm appears to influence in

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<sup>18</sup> Within group III indicators of quality or of utilisation of the materials were also inserted, in the case in which the improvement of these factors is expressly connected to processes of reorganisation that envisage a direct involvement of the workers. Otherwise, if direct participation is not considered, the indicators of quality were generally inserted in group II. Also those variables aiming to define the capacity of the workers to create greater integration between the phases of the work process are considered indicators of improvement of the efficacy and efficiency of the productive processes (group III indicators).

<sup>19</sup> In fact, our distinction of the indicators can be traced to the one recalled above. Significant overlapping can be seen between indicators of group I (of profitability) and of group II (of productivity), on the one hand, and the category of *output-oriented* indicators of PRP, on the other. At the same time, a consistency emerges between indicators of group III (of efficacy and efficiency) and the category of *input-oriented* indicators of PFP.

<sup>20</sup> Among these figure: the parameters adopted for the attribution “ad personam” of the bonus, the aims pursued by the agreement, the possible consolidation of the bonus, the maximum potential proportion of the bonus on the basic pay and its variability, the personnel involved, the forms adopted to check up on the agreement and the company performance, the operative unit adopted for the calculation of the indicators, the duration of the agreement, and the payment schedule of the bonus.

<sup>21</sup> Commerce, transport and above all banking and insurance.

<sup>22</sup> Textile workers, printers and also metalworkers.

<sup>23</sup> As moreover recent analyses have shown also for other local systems (Fabbri - Pini, 1998 and 1999, and Cainelli - Fabbri - Pini, 1999a).



particular the relative degree of complexity of the connection between bonus and performance, i.e. the number of the indicators adopted and the greater proportion of companies that adopt indicators.

The analysis by territorial areas on the other hand, allows us to point out some specific behaviour in the choice of indicators. It is hard to account for this heterogeneous pattern of behaviour solely by the specific nature of the sector composition of the various local systems; it seems to involve specific tendencies present in the various trade union categories and employers associations of the local systems examined.

A qualitative analysis of the indicators utilised reveals quite a heterogeneous pattern. In particular, this can be seen for all those deduced from company balance sheets, whereas the indicators of productivity appear far more standardised, being referred to the two big groups of physical productivity and traditional quality. With reference to those of efficacy and efficiency, the prevalence of process indicators can be seen, characterised by a relatively heterogeneous pattern. The reduced variety of indicators of group III, together with their low number, leads us to observe: a) a very slight presence of indicators of the *input-oriented* type connected to the work-tasks and to the learning processes of the human resources<sup>24</sup>; b) a similarly moderate adoption of indicators of decision-making on company organisation<sup>25</sup>.

The limited space reserved to both the typologies of indicators, consistent with a conception of PFP rather than of PRP, associated to the high frequency of traditional indicators of profitability and productivity, leads us to the hypothesis that in the decentralised bargaining on compensation flexibility, the second concept of bonus has greatly prevailed over the first<sup>26</sup>.

### 3.2 Other characteristics of the agreements

Here we shall be presenting the main results relative to some of the more important bargaining characteristics of PRP/PFP, specifically: (a) the maximum potential proportion of the bonus and its variability; (b) the consolidation of the bonus; (c) the forms of checking up on the PRP/PFP mechanism<sup>27</sup>.

The *average proportion of flexible compensation* through the instrument of PRP/PFP is around 5% (graph 1). This is not a particularly high proportion and would turn out to be all the lower if the potential PRP/PFP was related to the overall compensation of the worker, i.e. including the compensation in a fixed amount agreed upon in the company<sup>28</sup>.

With reference to the *variability*, first of all we note a significant proportion of agreements that can theoretically “eliminate” the PRP/PFP to be paid in relation to results held to be unsatisfactory: in 42% of companies no minimum guaranteed PRP/PFP is envisaged (graph 1)<sup>29</sup>. However, during the phase of putting the agreement into practice it would be necessary to check in how many cases this event actually happened, and when on the other hand also in the presence of unsatisfactory results a

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<sup>24</sup> In the meaning given by Leoni - Tiraboschi - Valiotti (1998).

<sup>25</sup> See the detailed analysis of the indicators employed in Fabbri - Melotti - Pini (1999).

<sup>26</sup> An analysis was carried out also on: a) distribution of the agreements that envisage *at least one* of the indicators of the first, second or third group; b) distribution of the agreements that envisage exclusively the *joint* presence of indicators of the first and second group, excluding therefore the indicators of efficacy and efficiency; c) proportion of agreements that do *not* envisage *any indicator* for the connection performance-compensation (table 4). Cf. Cainelli - Fabbri - Pini (1999b) and Fabbri - Melotti - Pini (1999) for details on the results.

<sup>27</sup> For the analysis of the other PRP/PFP agreement forms, see Cainelli - Fabbri - Pini (1999b) and Fabbri - Melotti - Pini (1999).

<sup>28</sup> The value indicated in the graphs as %CCNL indicates the proportion of the maximum variable compensation envisaged annually in every agreement for an intermediate skills level (for example, the 5<sup>th</sup> level for the metalworkers) and that earned by the same worker as the sum of the basic compensation (bargained at national category level) and the price-indexed wage (“*indennità di contingenza*”). For a complete examination of the proportion of compensation made flexible, an important element also for a correct calculation of the amount of “risk” transferred to the workers, it would be necessary to have an exact figure for the company compensation paid out to the worker, i.e. including the lump sum bonus, super minimum, production bonus, etc., data that unfortunately is not available.

<sup>29</sup> This happens in correspondence with the cases of variability 0-Min-Max, 0-Max, Yes-No, Absolute.

minimum bonus was anyway paid out, negotiated afterwards<sup>30</sup>. On the other hand again, the forms envisaging the guaranteed payment of the PRP/PFP are anyway significant: 22% of agreements on PRP/PFP envisage this procedure.

These procedures are influenced by the trade union category. Among the metalworkers and commerce trade union categories, a greater propensity can be noted to guarantee a proportion of the compensation “in any case” independently of the result arrived at<sup>31</sup>. In transport, banking and insurance, and the printers, the variability seems to be greater. Of especial interest is the examination of the variability of the compensation proportion in function of the size of the firm. In fact, while the variability increases with the growth in size, its variance<sup>32</sup> follows a diametrically opposite direction. This behaviour can be explained by the tendency to seek a greater simplicity and a more highly foreseeable PRP/PFP in small companies (low variability) and on the other hand payments capable of answering the specific dynamics of larger companies more effectively (high variability). However, if the latter behaviour is common in medium large and large companies (low variance), the same thing does not seem to occur in small companies, in which the range of behaviour is very wide (high variance).

It is also possible to identify the presence of relative “compensations” between the amounts of the bonus, its variability and presence of indicators of profitability<sup>33</sup>. On the basis of the analysis by trade union category we advance the hypothesis that there exists a specific range of propensity/aversion to risk<sup>34</sup>: at one extreme – that of the maximum propensity – there is the category of bank workers; the propensity to risk begins to diminish for the printers and transport workers; then it lessens further for the food industry workers, textile workers and building workers; a relative aversion to risk emerges for the trade union of workers in commerce and the chemical industry; and finally, we reach the metalworkers, who appear at the extreme opposite end with maximum aversion. An analogous analysis, carried out for firm size, reveals that the larger companies (above 249 employees) present high potential PRP/PFP and variability, and also a substantial share of indicators of profitability, while medium sized companies (from 100 to 249 employees) compensate for the high PRP/PFP value and variability with a lower proportion of indicators of profitability. Smaller companies (between 20 and 99 employees) reveal a further diminution both in the proportion of PRP/PFP and in its variability. The smallest companies (less than 20 employees), can be distinguished in that they have rather moderate quotas and variability, but to that is associated a substantial employment of indicators of group I. The propensity to risk sharing is, therefore, the prerogative of the bigger companies, and the aversion to these PRP/PFP procedures characterises the average size companies. With reference to the local system, we have two results. On the one hand, Piacenza and Imola emerge as local systems in which there is a greater propensity to underwrite agreements envisaging significant risk sharing. On the other, Bologna, Ferrara and Reggio Emilia seem to be

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<sup>30</sup> The high number of *additional lump sums bonus* met with in the region’s companies, and of which we have given an account in the previous section 2, is already an indirect confirmation of the prevalence of a mechanism of continuous bargaining in industrial relations, rather than the rigid application of the agreement reached on the subject of variable compensation.

<sup>31</sup> For these two trade union categories, the proportion of agreements in which a guaranteed bonus is envisaged turns out to be respectively 27% and 25% of the total of agreements on PRP/PFP. A high proportion can be met with also in the trade union category of chemical workers (with 23% of agreements) and of building workers (with 22% of agreements). These categories are the ones that present the lowest value of the synthetic index of variability.

<sup>32</sup> In this case we estimate the index of variability and its coefficient of variation, calculated as the ratio between the standard deviation of the index and value of the index. It can be seen, however, that there is a high proportion of agreements with guaranteed PRP/PFP in companies with less than 20 employees (with a proportion of 42% of total agreements for this size firm) and in the ones from 20 to 49 employees (in which the relative proportion is 29%). Vice-versa, much lower is the proportion of the agreements with guaranteed PRP/PFP in the larger companies.

<sup>33</sup> A more detailed in-depth analysis can be found in Fabbri – Melotti – Pini (1999), of which we relate here some results in synthesis.

<sup>34</sup> Specifically: bank workers, printers, building workers and food industry workers associate high proportions to high variability. Other trade union categories (metalworkers and commerce), on the other hand, show less tendency to adopt mechanisms of risk sharing, associating to a moderate bonus share a variability certainly not pronounced. Commerce, however, reveals also the considerable utilisation of indicators of profitability. Finally, there are categories that compensate for a high variability of the PRP/PFP with a low share of it: transport, first of all, and textile workers, to a lesser extent. In both cases the propensity to risk sharing is accentuated by the high share of indicators of group I.

local systems in which a pronounced aversion towards such forms of agreement prevails.

With reference to *consolidation* of the variable wage, there is evidence of a generally modest propensity to adopt this form. Little less than 24% of the agreements envisage a partial or total transfer of the variable share of the compensation on to parts of the compensation of a structural type and only in 21% of cases does the compensation paid out have any effect on the other parts of the company compensation, such as for example, the Christmas bonus and end-of-service payment<sup>35</sup> (table.5).

The theme of consolidation appears extremely important both for the company and for the workers, with important effects on the mechanisms of risk sharing and of incentives<sup>36</sup>. A link can be seen between prevailing PRP/PFP mechanisms characterised by the employment of certain indicators, and the degree of consolidation of PRP/PFP (Fabbri - Melotti - Pini, 1999).

First of all, it can be seen that the companies with PRP/PFP that adopt indicators utilise the practice of non-consolidation relatively less: around 75% of companies with indicators do not consolidate the bonus at all, while this percentage rises to 80% for the companies without indicators. Secondly, for the companies that employ indicators of profitability, a very high proportion of cases can be seen with no consolidation, corresponding to 78% of companies. The corresponding quota for the companies that employ at least one productivity indicator is 71%. For the firms that adopt efficacy and efficiency indicators the proportion of the companies that do not consolidate the bonus is still less, around 63% of companies. Among the companies that adopt indicators of profitability and the ones that adopt indicators of efficacy and efficiency, there is therefore a difference of more than 15 percentage points in the forms of non-consolidation.

From the analysis emerges, therefore, a relative consistency between utilisation of the indicators and amount of consolidation. Significant differences emerge also in the forms of consolidation, according to the typology of indicator adopted. These differences turn out to be in some way consistent with the prevailing PRP/PFP mechanism, that appears to be mainly that of incentives, and secondly, risk sharing, while that of participation would appear to be peripheral. Thus these relations between consolidation of PRP/PFP and indicators of performance seem to testify that we are in the presence of an agreement typology that is not very oriented towards the search for permanent and continual improvements in the efficiency of the company, that envisages the continual increase (and hence, a consolidation of previous results) of the structural compensation in accordance with the progress realised in company performance.

Finally, on examining the mechanism for *checking-up* on the agreement employed, the following results emerge.

Although in most companies a check-up of a joint type between company management and workers' representatives is envisaged (57% of the total), it can be noted also that for a significant proportion of agreements no involvement of the workers and union organisations is laid down, not even at the level of information (35,4% of the total).

Of particular interest is the link between proportion of agreements with joint check-ups and the size of the company. In the small (from 20 to 49 employees) and very small companies (from 1 to 19 employees) there is a widespread orientation towards not envisaging any mechanism of joint checking-up on the objectives reached: this happens, respectively, in 46% and 53% of the companies with PRP/PFP. Vice-versa, in the medium-large (from 100 to 999 employees) and big companies (over 999 employees) behaviour can be seen that is decidedly more favourable to involvement: respectively in roughly 65% and 79% of companies, the check-up is joint.

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<sup>35</sup> TFR, that is "lump sum severance payment".

<sup>36</sup> For an analysis of this aspect, cf. Mancinelli - Pini (1999).

### 3.3 A synthetic representation

The analysis carried out on the forms of agreement on PRP/PFP can be effectively represented in the *synthetic indexes* of participation, risk sharing and incentive mechanisms (tables-7-8-9)<sup>37</sup>.

Overall, the degree of *participation* turns out to be rather low, with an index of 0,452, below the 0,5 level that distinguishes between forms of non-participation and forms of participation<sup>38</sup>. The participation can be explained substantially in the *form* of the agreement, that is in the forms that describe, for example, the checking-up mechanism and the personnel involved. Vice-versa, from the point of view of the *contents*, i.e. of the indicators utilised, the characteristics of complete reversibility of the compensation (absence of consolidation) and the parameters employed, there is a slight participatory content in the PRP/PFP scheme<sup>39</sup>.

The degree of *risk sharing* also appears moderate, although certainly significant. On the whole, it turns out to be 0,390, and appears to be substantially founded on the non-consolidation of the maximum payable quotas, and, even though to a lesser extent, on the variability of the PRP/PFP, on the mechanism of checking-up and on the indicators utilised, characteristics that regard the *contents*, rather than the *form* of the PRP/PFP agreement<sup>40</sup>.

The synthetic index of *incentives* is the one that takes on the highest value, corresponding to 0,522 for the companies as a whole, indicative therefore of the fact that the traditional form of incentive is more widespread among the companies that have adopted PRP/PFP mechanisms. The *contents* rather than the *forms* of the PRP/PFP agreements contribute to the determination of this high value: characteristics of the indicators, parameters and non-consolidation type turn out to be important<sup>41</sup>.

From the examination of the synthetic indexes the features of the agreements recorded previously are confirmed. These are:

- 1) greater influence, in the determination of the synthetic indexes, and hence, of the PRP/PFP form, of the trade union category and of the local system, compared to that of firm size;
- 2) the high propensity to adopt traditional forms of incentivisation, rather than of risk sharing, that however do turn out to be present in some trade union categories of private services, specific trade union territories and both small and large companies;
- 3) the modest level of participation and involvement of the workers envisaged by the PRP/PFP agreements; with specific reference to the trade union category, the index of participation turns out to be always lower than the *level of neutrality* of 0.5, going above this level only in the companies with at least 1000 employers and in only two local systems, that of Imola and Ferrara;

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<sup>37</sup> The various elements that define the forms of the PRP/PFP agreements have been utilised to calculate indexes aimed at finding out in a synthetic way the prevailing mechanism employed in the determination of the PRP/PFP and the way it is run, i.e. degree of participation, risk sharing and traditional incentivisation. For the method by which the construction of the *synthetic indexes* was carried out, cf. Fabbri - Melotti - Pini (1999).

<sup>38</sup> The value of the synthetic index of participation can assume values in the interval that goes from -1 to +1. For an immediate comparison with the other indexes, that go from 0 to +1, it has been repropotioned in an analogous scale, for which the value 0,5 indicates a zero degree of participation.

<sup>39</sup> The value of the synthetic participation index shows the great importance of the trade union category that underwrites the agreement, greater than that of the size of the firm. At the same time, the role played by the local system of reference can be seen, represented by the trade-union territory in which the company is situated.

<sup>40</sup> A relation seems to emerge between the size of the company and the value of the synthetic index of risk sharing. We can see that the big companies show a lower index value than that of the smaller companies, but the ones with the lowest are the companies with between 100 to 249. This suggests the presence of a U relation between degree of risk sharing and size of company: both the small and big companies would be relatively more orientated to adopting PRP forms aimed at sharing risk with the employees. The behaviour of synthetic index for trade union category and for local system appears much more differentiated. A high degree of risk sharing characterises the private services, while the industrial categories show lower indexes. Finally, the local systems with a relatively high degree of risk sharing are those of Rimini, Cesena, Imola, Piacenza and Ravenna, while there are much lower indexes in Reggio Emilia, Ferrara, Forlì and Bologna.

<sup>41</sup> The categories that demonstrate a propensity towards this PRP/PFP form are those of the printers, workers in the food industry, and chemical workers. The metalworkers, the union categories of transport workers and of commerce are to be found at the extreme opposite end; and then, an important slice of the private services. With reference to the size of the firm, the degree of the traditional type of incentive appears rather homogeneous, and at the same time no relation seems to emerge between size and the value of the incentive index.

- 4) the propensity of the companies belonging to particular trade union categories (for example, those of printing, banking and insurance) or localised in specific territorial areas (for example, in the local systems of Cesena, Imola and Parma) to associate traditional forms of incentive with forms aiming at a sharing out of entrepreneurial risk with the workers;
- 5) the absence of significant *trade-offs* between the agreement forms singled out by these indexes.

#### 4. Determinants of variable compensation agreements

We shall now be analysing both the determinants of the probabilities of signing a variable compensation agreement, and the determinants of the specific PRP/PFP agreement forms in the companies that signed the agreement. The analysis concerned a sample of 737 industrial companies with over 50 employees, of which 298 had introduced PRP/PFP compensation schemes.

Economic analysis has indicated various kinds of motivation that would induce a company towards the adoption of PRP/PFP compensation schemes: a) incentive mechanisms, b) distribution of company productivity and profitability, c) risk sharing among employers and employees, d) participation of the workers, e) concessionary bargaining<sup>42</sup>. Our analysis intends, first of all, to investigate these motivations from an empirical viewpoint<sup>43</sup>, and, secondly, find out the determinants of the PRP/PFP forms.

##### 4.1 The dataset

The dataset utilised in the empirical analysis was constructed by employing two different statistical sources: (1) the balance sheet data of the “Centrale dei Bilanci” (CB) - a centre for the collection and analysis of company balance sheets - contained in IMPERO<sup>44</sup>; (2) the data base of the variable compensation agreements, constructed by starting from information on the company agreements signed in Emilia-Romagna in the period 1994-1997. From the *matching* of the two databases, 737 companies were identified with balance sheet data, of which 298<sup>45</sup> signed variable compensation agreements over the period 1994-1997.

The information of the database IMPERO relate to the universe of industrial companies with at least 50 employees and with balance sheets reclassified by the CB in the period 1991-1995. In this sense, it is not a sample of companies, but rather a universe of companies with more than 50 employees in Emilia-Romagna and with balance sheets reclassified by the CB. This dataset is composed of 909 companies. From these 909 those companies for which for one of the five years examined balance sheet information and/or the number of workers employed was not available were eliminated, thus arriving at 737 companies. Table 10.1 shows the distribution of companies by geographical location (province) and size, for the complete dataset (909 companies) and for the one utilised (737 companies). The coverage of the dataset utilised, compared to the universe of companies with reclassified balance sheet, appears good. The degree of coverage in terms of companies stands at almost 80%, and, something more important, without showing particular biases in the territorial and size distribution.

With reference to the database on the agreements, cf. the previous section (1). In the econometric analysis, only the industrial companies with at least 50 employees were taken into consideration. Table 10.2 presents the distribution of industrial companies whose company agreement is available (861), and of those that were employed in the analysis (298). The distribution of the 298 companies by provincial territory, size and

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<sup>42</sup> Cf. the vast literature for in-depth analysis on these motivations. See Black – Lynch (1997), Blinder (ed.) (1990), Cable (1988), Cable – Wilson (1989, 1990), Carstensen - Gerlach – Hubler (1995), Estrin - Grout – Wadhvani (1987), Leoni - Tiraboschi – Vanoncini (1998), Baglioni (1995), Biagioli (1996), Ichino (1989), Mariotti (ed.) (1995), and Kruse (1993).

<sup>43</sup> With an analogous methodology to the one employed in Cainelli - Fabbri - Pini (1999c) for the study of the probability of the adoption of PRP/PFP.

<sup>44</sup> IMPERO is an archive relating to all the manufacturing industrial companies with at least one plant localised in Emilia-Romagna and to a sample of artisan companies of significant size (usually with more than ten employees). For a substantial number of companies, this database contains information on balance sheet data, whose source is the CB.

<sup>45</sup> Of these 298 companies with bonus schemes, there are 56 for which the indicators of company performance utilised for the determination of the variable quota are not indicated at the time of bargaining in the agreements.

trade union category does not show particular biases concerning the initial dataset of 861 companies with variable compensation agreements in the industrial sector. One aspect of a certain importance is the decrease of the proportion of companies with less than 100 employees, due to the non-inclusion of companies below 50 employees, and therefore the different distribution of companies by size, which shows an under-representation of smaller companies and over-representation of medium size companies.

#### 4.2 An econometric analysis of the probability of adoption<sup>46</sup>

The econometric findings confirm the relevance of some important variables suggested by economic theory<sup>47</sup>. At the same time, there are strongly specific factors that distinguish the behaviour of the different companies, besides those of economic sector, trade union category, territory and size<sup>48</sup> (table 11). This suggests extreme caution in the economic interpretation of the results themselves.

First of all, we have to point out the strong relevance of a majority of the sector dummies, and of trade union category and territory. The propensity of some local systems to introduce more PRP/PFP mechanisms than others, according to us, answers to a bargaining policy adopted in a differentiated way by the various local Trade Union Confederations and Employer Associations. This, together with the influence exercised by the economic sector and by the trade union category, explains a significant proportion of the correct predictions of the probability of adoption.

Secondly, the positive influence of the size variable has to be noticed. The inclusion of size dummies, or of the number of employees and sales variable, appears to greatly increase the model's explanatory power, at the same time suggesting the preference for the former compared to economic variables (number of employees and sales)<sup>49</sup>.

With reference to factors of a more purely economic type, that can explain the probability of signing agreements, the following results emerge.

The *incentive mechanism* as the motivation behind arriving at a PRP/PFP scheme appears to be confirmed by the estimated model. First of all, the level of productivity (PROD1K), measured as ratio between added value and employees<sup>50</sup>, shows a negative effect, statistically significant, on the probability. This is consistent both with the majority of Anglo-Saxon studies, and with the results obtained in the Italian experience by Prosperetti - Ravanelli - Caironi (1996) and Del Boca - Ichino (1993)<sup>51</sup>. In addition,

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<sup>46</sup> In this version of the work the tables present the basic econometric results; for greater detail cf. the complete work Cainelli - Fabbri - Pini (1999b). Estimates brought up to date, that confirm the results presented in Cainelli - Fabbri - Pini (1999b), are available to readers on request.

<sup>47</sup> The methodology adopted was that of estimating the probability of signing or otherwise a variable compensation agreement on the basis of the available characteristics for a sample of companies in the course of the previous period (in our case the years 1991-1995). The probability of signing an agreement on PRP/PFP at the time  $t$  depends on characteristics at time  $t-j$ , that goes from 1991 to  $t-1$ . In this specific case, given the lack of balance sheet data for 1996, the companies with an agreement in 1997 were eliminated from the analysis. In addition, the fact that some companies signed the agreement in 1996, 1995 or 1994 was taken into account. To this end, with the exception of equation [1], the estimates were carried out by excluding the companies with a PRP/PFP agreement in 1997 and the observations relative to the year  $t$  for those companies that signed the agreement in the year  $t$ . The equation [1] was estimated on the other hand without taking into account the year of the agreement, and therefore without eliminating the companies with an agreement in 1997 and not even the contemporary observations in the case the agreement had been signed in 1996, 1995 or 1994. The econometric analysis was carried out by utilising robust *probit* estimators for the potential presence of heteroschedasticity in the data, and utilising the observations relative to the individual years.

<sup>48</sup> In table 11, the first five estimates refer to the same basic equation, and differ as far as number of observations, method of estimate, and temporal dummies go: for [1] the robust *probit* estimator was employed, including all the annual observations relative to the 737 companies, of which 298 with PRP/PFP; for [2] the observations relative to the 711 companies were utilised, of which 272 with PRP/PFP; for [3] the robust *probit* estimator with random effects was employed, utilising the same observations as [2]; for [4] annual dummies were included and the observation and the method of estimation of [2] employed; for [5], from the companies employed in [2], the ones in which the PRP/PFP agreement does not make explicit the indicators employed were excluded, and the estimator utilised is that of [2].

<sup>49</sup> In addition, the size effect acts not only through traditional dummy sizes, but also through the economic variables included in the equation, whose influence therefore does not turn out to be independent of the size of the company. A similar exercise carried out with reference to the territory dummy allows us to arrive at similarly significant results: the influence of economic variables is specific to the local system where the company is located. For reasons of space the relative econometric estimates are not presented.

<sup>50</sup> By adopting this indicator as a proxy capable of picking up the operation of the incentivating mechanism, as is usual in the literature. Similar results are obtained with the employment of the ratio between sales and employees.

<sup>51</sup> In these studies however, with less significant statistics, as recalled in Cainelli - Fabbri - Pini (1999c).

the capital/labour ratio (KL<sup>52</sup>) shows statistically significant positive effects, similar to the investments for employee and to the capital/product ratio<sup>53</sup>; this can be interpreted as confirmation of the presence of: a) restructuring processes that in particular characterise companies with PRP/PFP (following the interpretation of Biagioli - Curatolo (1997)) that is utilised as incentive mechanism; b) characteristics of the companies with PRP/PFP schemes that present a higher intensity of capital, and are technologically more advanced. A further variable that holds up the incentive mechanism is represented by the rate of growth of the unit labour cost (TCCLUP1K): companies where the unit labour cost grows more would adopt PRP/PFP to introduce compensation flexibility on the one hand and increase the productivity of labour on the other, as other studies seem to suggest.

The *redistributive mechanism* itself also emerges from the estimates carried out as a robust economic motivation. There are two profitability variables that appear to exercise a positive impact on the probability of signing agreements on PRP/PFP. First, the companies rate of profit (MT)<sup>54</sup> and second, the growth rate of the added value (TCVAK). In addition, a variable of productivity that may pick up the existence of a flexible mechanism of distribution of the benefits of technical progress and improvements in productive efficiency turns out to positively influence the probability of adoption: the growth rate of labour productivity (TCPROD1K). The positive effect of these variables seems to us a substantial and direct confirmation of the motivation *gain/revenue/profit-sharing*, consistent with other results (for example Cainelli - Fabbri - Pini (1999c), Del Boca - Cupaiuolo (1997) and Prosperetti - Ravanelli - Caironi (1996) for productivity; Del Boca - Ichino (1993) and Prosperetti - Ravanelli - Caironi (1996), where the gross operative margin is employed)<sup>55</sup>.

With reference to the *risk sharing* motivation, we have opted for an attempt at verification in part similar to the one carried out in Prosperetti - Ravanelli - Caironi (1996) and re-utilised in Cainelli - Fabbri - Pini (1999c)<sup>56</sup>. In addition, we have carried out an analysis in part similar to the one in Erickson - Ichino (1994), as far as the available data allowed, with the aim of finding a possible influence of an environment of an expanding or contracting type, specific to the company, on the probability of adoption. We have found favourable evidence for some indicators that turn out to be statistically significant in influencing the probability of signing agreements on PRP/PFP, but the direction of this effect does not always appear to be the one expected; for other indicators, the results have not been of any great comfort. A first significant variable is represented by the growth rate of financial burdens of the company (TCFINBURDK): it significantly influences in a positive way the probability of agreement; growing financial exposure would seem to push the company towards adopting mechanisms of risk sharing with the workers<sup>57</sup>. Other variables that refer more specifically to the indebtedness (total and financial<sup>58</sup>) of the company, do not give rise to stronger and more convincing results from the interpretative point of view of "risk sharing"<sup>59</sup>. With reference to the context of the environment (Erickson - Ichino, 1994), it emerges that while favourable market conditions do not significantly influence the probability of adoption, unfavourable conditions exercise a negative effect on this probability, and this would not therefore support the hypothesis according to which a

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<sup>52</sup> Ratio between net investment and labour cost.

<sup>53</sup> Ratio between net investment and employees, and between net investment and sales or added value.

<sup>54</sup> i.e. the ratio between gross operative margin and net investment (assumed as proxy of the profit margin).

<sup>55</sup> Other variables, such as the cost of labour and its growth rate, show negative effects on the probability of adoption, as if indicating that the companies in which this cost is lower and not in sustained growth have greater margins for the concession of reversible compensation increases, a result not in conflict with the *revenue/profit-sharing* motivation.

<sup>56</sup> This choice is based also on the conviction that the effects exercised by indicators such as investments and labour costs per employee are not easily traceable to this motivation, as is asserted, on the other hand, in Del Boca - Ichino (1993) and Del Boca - Cupaiuolo (1997).

<sup>57</sup> Vice-versa, the coefficient of the level of the financial burdens is negative. This result does not change also when this variable is normalised with the employees or with the average sample of the same variable.

<sup>58</sup> Net capital or net financial burdens on net profit.

<sup>59</sup> The evidence provided by the level of the financial burdens and above all by indebtedness (level and rate of growth) could on the other hand suggest that companies less exposed and with favourable exposure dynamics, have a greater tendency to introduce PRP/PFP mechanisms and therefore to concede compensation increases of a reversible type, a result that can be interpreted in terms of *ability to pay*, in support therefore of the redistributive mechanism of which we spoke previously.

climate of uncertainty in the product market would lead the company to introduce flexibility for a proportion of the compensations as an instrument for the risk sharing<sup>60</sup>. These results therefore do not seem to convincingly confirm the role of *risk-sharing* motivation. It is only the growth rate of the financial burdens, assumed as *proxy* of the company's risk factor, that leads to risk sharing through PRP/PFP, whereas the degree of uncertainty of a sector, measured by the variability of indicators of company profitability, does not appear important<sup>61</sup>. The specific context of the environment does not provide, furthermore, any support to the hypothesis of risk sharing.

On turning our attention to economic variables whose role is emphasised in some studies on the Italian experience, in relation to the *concessionary bargaining* motivation, some significant results seem to emerge. With reference to the cost of labour per employee, or gross compensation per head (WAGEPK), statistically significant and positive effects can be seen: it would seem that companies with high compensation levels are led while bargaining to introduce flexible compensation mechanisms. We find confirmation, that is, of the positive effects recalled in Del Boca - Ichino (1993), and not the negative effects found in Del Boca - Cupaiuolo (1997) and Prosperetti - Ravanelli - Caironi (1996).

Finally, among the variables we have considered in the estimates there is also an indicator of sector concentration of companies, the Herfindhal index (HHS), which is always significant. A high sector concentration<sup>62</sup> of companies appears to be associated to a lower probability that these sign agreements on PRP/PFP. The environmental context where the companies are located (geographically and for sector) is characterised by the presence of systems of small and medium size companies and by industrial districts that determine a modest concentration. This does not exclude, however, that these companies can enjoy some degree of market power compared to external competitors, and a competitive level sufficiently high to determine rent<sup>63</sup>. The negative effect of the index of concentration, in the absence of other appropriate indicators, could capture the existence of a motivation of the *rent sharing* type of the sector<sup>64</sup>.

The previous results lose part of their strength when the estimation method adopted, exploiting the panel structure of data, is the *random effects probit model*, confirming however at the same time the presence of some important factors in the determination of the probability of signing agreements on PRP/PFP mechanisms. The majority of the size, sector, category and territory variables remain significant. In addition, while some of the economic variables remain broadly significant, others lose it, despite the fact that their sign has not been modified. In particular, the significant influence exercised by the level of compensation per head and the index of concentration appears confirmed. This leads us to believe that what was argued in Cainelli - Fabbri - Pini (1999c) finds confirmation with reference to the companies of the Emilia-Romagna region. The importance of company economic variables does not allow us to relegate to second place the role played by the institutional behaviour of employer associations and trade unions and workers' representatives in specific local contexts, and by specific features of sector and size, which appear strongly explanatory of the probability of agreement signing. This could have been important before 1993, but we believe all the more so after the June 1993 agreement, because of certain aspects of industrial relations, in the presence furthermore of tax incentives, albeit very limited<sup>65</sup>.

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<sup>60</sup> In our analysis we utilised one of the methodologies suggested by Erickson - Ichino (1994) for the environment context, employing as variables the ratio sales/net profits. See for details on the results, Cainelli - Fabbri - Pini (1999b).

<sup>61</sup> See Cainelli - Fabbri - Pini (1999b, table 4.7).

<sup>62</sup> i.e. a high value of the index HHS.

<sup>63</sup> This interpretation does not appear to contradict the one put forward by Biagioli - Curatolo (1997), who see a certain role played by "rent positions" and "extra-profits" that can be distributed also to the workers through company bargaining envisaging the reversibility of compensation increases. In our case, this would be captured by the index of concentration.

<sup>64</sup> This is an interpretation that we have put forward more as a working hypothesis than as strong statistical evidence in the previous work on Bologna companies (Cainelli - Fabbri - Pini, 1999c), and that here appears to find confirmation.

<sup>65</sup> The non-availability of information on these aspects prevents us from verifying in which direction these factors express their effects. Still more relevant is what we wrote in Cainelli - Fabbri - Pini (1999, p.39 (vers.1998)): "In the territory of Bologna, as well as for Emilia-Romagna, the possibility of being able to use information on forms of agreement, on company balance sheets and on the climate of industrial relations in companies appears to be distant



With the aim of finding further confirmation of what we have stated above, we also empirically analyse the possible influence by industrial relations on the adoption of PRP/PFP mechanisms. For a subset of 334 companies of the 711 previously considered, we have available, in addition to the company balance sheet data, some information that can be deduced from the agreements signed in the years 1994-1997 on the characteristics of the industrial relations. Among these, there are 272 that introduced bonus compensation schemes. The information concerns the bargaining on issues such as: (a) information transmitted to the organisations of workers' representatives within the company; (b) availability of company balance sheets; (c) presence of joint committees; (d) work organisation; (e) working-time schedule; (f) training; (g) economic deal (structural company compensation, production bonus, super minimum, lump sum bonus).

The econometric analysis allows us to show the influence exercised by variables relating to the climate of industrial relations (table 11)<sup>66</sup>. The specification adopted, on the one hand, confirms the importance of context variables, such as the economic sector, the union category and the territory referred to, as well as the size of the company. In addition, some of the economic variables traceable to incentive mechanisms, the redistribution of productivity and profitability, and concessionary bargaining turn out to be statistically significant. On the other hand, the explanatory power of the model increases significantly with variables relating to bargaining on information, work organisation, working-time schedule and training: these have a positive influence on the probability of adoption, with the exception of the bargaining over working-time schedule<sup>67</sup>. Furthermore, the presence of joint committees and the availability of balance sheet data, elements which are very often associated with the introduction of the PRP/PFP mechanism, appear to influence positively the adoption. These aspects could be interpreted as indicators of a climate of industrial relations favourable to the introduction of schemes of economic participation and participation in decision-making, and in this sense favourable to the adoption of the PRP/PFP<sup>68</sup>. Finally, further characteristics of bargaining on economic issues appear to be associated *negatively* to the introduction of PRP/PFP, specifically the bargaining over compensation increases in fixed amounts, reversible and otherwise, such as structural company compensation, production bonus, super minimum and lump sum bonus.

All these elements greatly increase the explanatory power of the model, without, however, reducing the influence of the environment and context variables introduced previously, or eliminating the influence of economic variables, which however appear to play a marginal role in the determination of the process of adoption<sup>69</sup>.

### ***4.3 Seeking the determinants of the various flexible pay schemes***

In this section we shall be presenting some results on the explanatory factors of the PRP/PFP forms that we found out in section 3. We shall be taking exclusively into consideration those companies that adopted the PRP/PFP in the period examined, and for which there is balance sheet data available from 1991 to 1995 as well as information

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because of the political difficulties met with relating to the third aspect, both on the part of companies and (above all) the unions".

<sup>66</sup> The relative estimate is [6], for which the robust *probit* estimator was employed.

<sup>67</sup> As will be remembered from the previous part 2 the companies with PRP/PFP do not present a more intense working-time bargaining compared to the companies without PRP/PFP.

<sup>68</sup> In this case it must, however, be observed that, according to us, this relation cannot be interpreted in terms of "cause and effect", in that the two aspects (introduction of the PRP/PFP on the one hand, and the presence of bilateral technical committees and the availability of company balance sheet on the other) could turn out to be a single decision-making process.

<sup>69</sup> Obviously these results have to be evaluated and compared to the previous ones with extreme caution at least for three kinds of reasons: (a) the set of companies considered has changed radically (272 out of 334 introduced PRP/PFP corresponding to 81,43%) compared to that employed previously; (b) the variables of industrial relations were singled out on the basis of the analysis of the same company agreements signed in the period 1994-1997 from which the information was deduced about the introduction of PRP/PFP (the decisions could have been taken simultaneously within each firm) (c) other variables that concern issues agreed upon take on a specific aspect precisely whether, within the company, the PRP/PFP was adopted or not.

concerning the company bargaining carried out between 1994 and 1997, and the climate of industrial relations that can be deduced from that bargaining<sup>70</sup>.

The aim is to empirically analyse to what extent company variables of a purely economic type that can be deduced from the balance sheets, together with variables of context and industrial relations, can contribute to the determination of the specific PRP/PFP mechanisms adopted within the companies.

To this end we carried out the economic analysis at two levels.

A first level, already adopted in a similar way in other studies (Prosperetti - Ravanelli - Caironi, 1996), is represented by estimates<sup>71</sup> relating to the probability that the connection of the PRP/PFP to the performance of the company takes place through specific indicators, identified as belonging to three groups we have singled out:

- a) only indicators of group I, of company profitability;
- b) only indicators of group II, of productivity;
- c) mixed indicators both of group I and group II, of company profitability and productivity, utilised jointly<sup>72</sup>;
- d) indicators of group III, of efficacy and efficiency.

The utilisation of these indicators allows us to show to what extent the introduction of PRP/PFP is more oriented towards a traditional incentive mechanism, towards risk sharing, and/or answers to an *ability to pay* of the company, or whether such mechanisms are both present in the determination of the PRP, and finally whether it takes on the features of a PFP (with involvement and participation in decision-making) rather than a PRP (where participation is limited to financial and economic aspects).

A second level renders the approach adopted more explicit, and is represented by estimates<sup>73</sup> aimed at explaining the variance and the probability of the three *synthetic indexes* we constructed for each company: i) of incentive, ii) risk sharing and iii) of participation. It will be remembered that in the construction of these indexes the type of indicator adopted takes on an important role.

From the econometric analysis (table 12), first of all, the strong significance the variables of context and size of the company take on in the determination of the form of PRP/PFP appears to be confirmed. Whether the analysis is carried out with reference to the synthetic indexes or, more simply, it concerns the presence of specific typologies of indicators, the influence exercised by the trade union category, by the economic sector, and above all by the local system, turn out to be extremely significant. To this should be added the role played by the size of the firm, showing a positive effect on the synthetic index of participation, and negative on that of incentivisation, while that of risk sharing appears to be positively influenced by the presence of small and large companies rather than of medium size<sup>74</sup>.

Secondly, although it cannot be excluded that company economic variables deduced from balance sheet data exercise a certain influence on the determination of PRP/PFP forms, their specific influence does not appear to be always clear, and in some cases expectations are not confirmed. In most cases, however, the econometric analysis carried out appears to support the presence of economic motivations behind the adoption of different PRP/PFP schemes. The contribution of the economic variables appears anyway marginal compared to the variables of context, size and industrial relations.

Thirdly, the role played by variables that capture the climate of industrial relations and the nature of the bargaining in companies with PRP/PFP is confirmed. The introduction of these variables increases considerably the explanatory power of the model, influencing significantly the forms of PRP/PFP. In particular, the three mechanisms we examined should be considered separately.

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<sup>70</sup> This information is assumed as a *proxy* of industrial relations, given the lack of more adequate data deriving from specific surveys carried out, for example, through questionnaires. Despite this limitation we believe that the introduction of variables that reflect the climate of industrial relations can contribute significantly to giving an account of the different forms of PRP/PFP.

<sup>71</sup> The robust *probit* estimator was utilised.

<sup>72</sup> In the appendix to this text the results concerning it are not reported.

<sup>73</sup> OLS estimators were utilised with correction for the eventual presence of heteroschedasticity in the data, and robust *probit*.

<sup>74</sup> These results with reference to size appear to be consistent with the ones shown by the analysis of the agreement forms (section 3).

With reference to the synthetic index of *participation*, it appears significant that it was positively influenced by the bargaining on: a) information transmitted to the organisations of the workers representatives within the firm; (b) availability of the company balance sheets; (c) work organisation; (d) programmes for training of a specific type and relating to out of the job-training (Out-JT) (study-work). At the same time, (e) the bargaining on economic issues of a traditional type (structural company compensation, production bonus, super minimum, and lump sum bonus) negatively influences the synthetic index of participation, as well as also (f) bargaining on working-time schedule<sup>75</sup>.

On examining the results relative to the synthetic index of *risk sharing*, it can be observed that variables of industrial relations, such as bargaining on: (a) work organisation and (b) plans for training of a specific kind are negatively correlated, as might have been expected, at the degree of risk sharing implicit in the PRP mechanism; in a similar way also (c) compensation increases of a reversible type in fixed amounts (lump sum bonus) are negatively correlated to the synthetic index. Vice versa, (d) the availability of balance sheets and (e) the presence of joint technical committees are positively correlated to this index, just as (f) irreversible compensation increases (super minimum)<sup>76</sup>.

Finally, from the examination of the estimates concerning the synthetic index of *incentivation* it emerges that the majority of the variables assumed as proxy of the industrial relations do not exercise any influence (positive/negative) on the these forms of traditional incentive mechanisms, with the exception of some forms of bargaining concerning: (a) planned training linked to the introduction of the PRP (positive effect), (b) OutJT such as study-work programmes (effect negative), (c) work organisation (with uncertain sign) or (d) training in general (positive effect). At the same time, bargaining in economic matters that imply compensation increases in fixed amounts, reversible and otherwise, appears to be associated with a low value in the incentivation index<sup>77</sup>.

## 5. Conclusions and implications of the policy

As has already been underlined elsewhere (IRES Emilia-Romagna, 1999; Fabbri - Pini, 1999), the agreement phase that began with the incomes policy agreement of July 1993 represented a strong new start in decentralised negotiating initiative between companies and workers' representatives, as moreover had been and is to be hoped for (Giugni, 1993; Fazio, 1998; Boeri, 1999). However, the attitudes on the part of some category associations are well known<sup>78</sup>, contrary to the extension of decentralised negotiating practices to companies previously not covered by company bargaining. At the same time, and perhaps also for this reason, the continuation of a broad negotiating deficit in small and medium size companies cannot go unnoticed.

The diffusion of PRP/PFP mechanisms shows how much success the new compensation schemes had in Emilia-Romagna, involving more than 60% of companies in which company bargaining takes place<sup>79</sup>, and extending in a significant way to small and medium size companies. At the same time, both the continuation of compensation practices only of a traditional kind in the remaining 40% of companies, as well as the significant amount of overlapping of traditional and innovative practices in those

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<sup>75</sup> With reference to the economic variables, it can be seen that those that can be traced to incentive mechanisms and of redistribution of company profitability and productivity influence as expected the synthetic index. There emerges also a confirmation of the mechanism *a la* Del Boca - Ichino (1993) and Del Boca - Cupaiuolo (1997) of *concessionary bargaining* in the sense that in the companies where the level of compensation per head is low, but on the increase, they tend to introduce PFP with forms of direct participation, probably to make up for a low compensation dynamic in the recent past.

<sup>76</sup> To this should be added the influence exercised by some economic company variables traceable to a risk sharing motivation such as growth of the financial burdens and financial indebtedness, the presence of an expanding and a contracting environment for the company (*a la* Erickson - Ichino (1993)), and others linked to distributive mechanisms of profitability and productivity, such as technical margin and cost of labour.

<sup>77</sup> The analysis of economic variables would seem to suggest, finally, that behind the adoption of this mechanism there is a strong motivation of incentivation linked to processes of growth of the intensity of investments per employee, to the high level of the unit labour costs, and to the level of productivity, to which are added also motivations of a redistributive type (above all *profit sharing*).

<sup>78</sup> For example this is the position expressed many times by the leaders of Federmeccanica, the Italian Association of Mechanical and Metallurgical Employers.

<sup>79</sup> This percentage refers to the companies with LCIMs bargaining.

companies where the PRP/PFP was introduced, can be noted. This answers to a policy of a redistributive type, more than understandable in a phase in which (a) the maintenance of the compensation purchasing power for various categories of workers was not realised following on the divergence between planned inflation and actual inflation and (b) the way the distributive share went compared to the dynamic of labour productivity, turned against labour, as the Banca d'Italia (various years) has frequently had occasion to point out.

From this point of view, the introduction of PRP/PFP compensation mechanisms can be understood as a substitutive element rather than complementary or additional, compared to a distributive dynamic that was significantly deteriorating. Indeed, as others have underlined within a macroeconomic framework (Fabiani - Locarno - Oneto - Sestito, 1998), despite the *mix* (innovative and traditional) of decentralised compensation bargaining negotiations, the spread of PRP/PFP has however positively represented a mechanism of stabilisation for the economic system overall. Furthermore, we should also take into account that the agreement of July 1993 meant commitments for active labour market policies and support of the productive system that were not maintained in the meantime in an adequate way and for which, indeed, there was the need of their strengthening against the background of the agreement of December 22nd, 1998. This latter agreement, on the one hand, reiterates the need for decentralised bargaining practices within a framework of income policies aiming at the control of inflation, in a context that is, however, no longer inflational, and on the other, commits the government to carry out specific actions in support of productive activity through incentives to private investment, the reform of the taxation system, state infrastructural policies, and interventions for the growth of human capital.

A further element is represented by the "quality" of the bargaining at the company level. The way the same issues and backgrounds that were the object of decentralised bargaining turn out to have grown compared to the previous cycle has already been underlined (IRES Emilia-Romagna, 1999). From our study it emerges also that this "quality" appears to be significantly different, for the better, in the companies where the PRP/PFP was introduced. It is precisely the *index of participation* we obtained through the analysis of the bargaining forms relating to the introduction of the PRP/PFP that appears to be associated *positively* to the bargaining on the subject of information, joint technical committees, work organisation, and training, and *negatively* to the presence of lump sum bonus, additional lump sum bonus linked to PRP/PFP, PRP/PFP with the delay clause, and PRP/PFP aimed at reducing social contributions. "Quality" in the bargaining and the introduction of the PRP/PFP in Emilia-Romagna's companies seem to be two aspects that develop jointly in the agreement stage since 1993.

It would be interesting to know whether and to what extent the introduction of PRP/PFP mechanisms is fostered by a positive and advanced (participatory) climate of industrial relations, or whether it is the necessity of introducing the PRP/PFP that encourages an improvement in industrial relations and a broadening of bargaining horizons. Lacking an adequate informational set, we do not feel able to provide an answer (strongly implying policy recommendation) with any certainty.

On the basis of the analysis on the bargaining forms of the PRP/PFP mechanisms introduced, we can, nevertheless, put forward a few hypotheses. In particular, we note a significant connection between characteristics of company bargaining and the degree of participation incorporated in the PRP/PFP mechanism. The presence in the company of a system of industrial relations addressed to the involvement of the workers in decision-making processes can be translated into a variable compensation with greater participatory characteristics. The estimates on the probability of adoption carried out for the subset of the sample would seem to indicate that the quality of the bargaining and industrial relations may positively influence the process of adoption, also when checking up on the bargaining on traditional compensation forms<sup>80</sup> (that instead have a negative effect). In this sense, the bargaining forms adopted appear to be the effect of the application of a particular system of industrial relations, whereas there are no

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<sup>80</sup> That is, compensation increases of a fixed amount, irreversible, (structural company compensation, production bonus, and super minimum) and reversible (lump sum bonus).

elements that can lead us to explain an improvement of the latter by the adoption or otherwise of a specific form of compensation payment<sup>81</sup>.

It should nevertheless be remembered that the decentralised bargaining agreements on bonus with a high degree of participation (PFP) are a small minority by comparison to others with different characteristics (PRP). This means that if, on the one hand, companies perhaps do not attribute the necessary importance to this aspect, on the other hand the workers' organisations appear to elude what is certainly an interesting challenge concerning the everyday and direct task of measuring up to aspects of management aspects and decision-making processes in the company<sup>82</sup>.

Indeed, observing in general the bargaining forms adopted, a traditional PRP mechanism seems to be favoured by the majority of companies<sup>83</sup>, sheltering the employers on the one hand against greater uncertainty in the market (the insertion of profitability indicators beside those of productivity), and on the other, shields the workers against excessive fluctuation (of course mainly downwards) of the variable share that may be earned; all this against a background of a mechanism of industrial relations addressed substantially to the reduction/elimination of conflict, also through the use of compensation forms in fixed amounts.

All in all, the variable compensation would seem to be agreed upon more as a projection/forecast of the share to be earned than in consideration of the variables for which the share itself will have to be paid: "how much is paid" is much more important than "the reason for or the way payment takes place". Because of this perspective, a real "trading" of the constituent elements of the agreement on the PRP/PFP can be seen to occur between the two sides, generating solutions that are perhaps not for the best either for the company or for the workers and trade union<sup>84</sup>.

For these reasons, and in addition taking into account the significance we assigned to the PRP/PFP instrument (and to decentralised bargaining in general) as the mechanism best suited to improve company competitiveness, in our opinion it is necessary to further encourage the two sides of industry to implement these bargaining practices, restoring the true reasons for which it had been introduced, with the transfer elsewhere of mechanisms aimed at, for example, the maintaining of compensations' purchasing power. In this way by "freeing" the "local bargainers" from this and other constraints, the search for models of industrial relations and bargaining forms addressed to the strengthening of a system of direct participation and involvement of the employees as an instrument of company competitiveness would be encouraged<sup>85</sup>.

The above remarks are confirmed in the econometric analysis on the probability of adoption of PRP/PFP. If on the one hand the influence of economic variables cannot be excluded, on the other, context and industrial relation variables substantially increase the explanatory capacity of the model<sup>86</sup>. However, the variables of size, sector, trade union category and local system are those that show a high level of significance. Behaviour of an institutional type is probably behind the decision to adopt more flexible compensation forms, containing a slight participatory content (economic and decision-making). In addition, as recalled above, elements that can be used to define the climate

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<sup>81</sup> It is, however, necessary to point out that as far as the agreements examined in this study are concerned, we cannot exclude *a priori* the presence of an eventual *feed-back* of the bargaining forms adopted on the system of industrial relations. However, a previous attempt at research in this direction, though referring to companies of another local system - Udine - (Fabbri - Pini, 1998) supports this hypothesis, at least in part.

<sup>82</sup> See also Del Boca - Kruse - Pendleton (1999).

<sup>83</sup> Generally of an incentive type.

<sup>84</sup> The reference is to cases where for example the compensation paid out is not consolidated in the years afterwards, but where however a minimum payment is guaranteed even when the results are entirely negative; or where the absence of a checking mechanism coincides with a more frequent payment of the PRP/PFP; or again, the cases in which indicators of performance are not found, giving rise to a PRP/PFP mainly for the purpose of reducing social contribution ("cosmetic contracts").

<sup>85</sup> Encouraging the trend towards an increasingly widespread and coherently worked out company bargaining may foster the overcoming of inevitable problems of greater coordination on the part of employer and employee associations (Boeri, 1999).

<sup>86</sup> Motivations of a redistributive type of company productivity and profitability, as well as that of the incentivisation of the workers in the presence of phenomena of restructuring, appear to be confirmed. On the other hand, more controversial appears the presence of motivations connected to company risk sharing, even if their presence certainly cannot be excluded. To this must also be added the role played by concessionary bargaining at company level with the exchange of reversible compensation increases against greater openness to compensation and function (organisational and technological) flexibility.

of industrial relations in the company appear to have a significantly positive effect on the probability of adoption.

The importance of variables of context, of company size, and of industrial relations, appears to be confirmed also by the analysis concerning the forms of the PRP/PFP introduced, distinguishing between incentive, risk sharing and participation mechanisms. These forms answer to the various bargaining typologies in different ways: whereas the mechanism of a participation kind is positively influenced by the “quality” of the bargaining and climate of industrial relations, this does not seem to be the case for the incentive and risk sharing mechanisms which are also associated to bargaining forms which are not participatory. Furthermore, PFP forms seem to answer to economic variables that capture motivations both of a redistributive and incentive of work effort type, whose operation is not exclusive to bonus mechanisms with PRP characteristics.

The importance, however, of PFP schemes appears to be rather limited in the bargaining experience during the years 1994-1997 in Emilia-Romagna. The adoption of bonus compensation mechanisms seems indeed to have found the PRP form preferable to PFP, following the meaning proposed by Leoni - Tiraboschi - Valietti (1998)<sup>87</sup>. Compensation flexibility through PRP/PFP mechanisms can have an important function to increase company competitiveness, but in very different ways (Cainelli - Fabbri - Pini, 1999a)<sup>88</sup>. In the context of the *defensive flexibility* model, the PRP figures as an instrument of reduction or containment of the unit labour costs and the adjustments of prices in reply to the competition of the product market, with features both of traditional incentivisation of work effort and of company risk sharing. Vice versa, the pursuit of an *innovative flexibility* model implies a PFP at the same time instrument and reflection of a scheme of making the workers co-responsible, and involving them in decision making processes with the sharing of some company objectives, and in which PFP is connected to the competence possessed and expressed. From the recent experience of decentralised bargaining in Emilia-Romagna an *innovative flexibility* model, probably requiring a capacity, motivation and determination that the two sides of industry do not yet possess, would not seem to emerge; however, not even a strong *defensive flexibility* model has emerged, to the extent to which both sides have chosen a certain degree of rationalisation of a potential distributive conflict.

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<sup>87</sup> See also Cainarca - Sgobbi (1997).

<sup>88</sup> See also Coriat (1995) and Killick (1995) on these features, as well as Antonelli - Paganetto (eds.) (1999).

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Appendix

**Table 1: General characteristics of company bargaining**

<b>Bargaining issues</b>	<b>Companies with PRP/PFP</b>	<b>Companies without PRP/PFP</b>	<b>% of Total Companies</b>
- Number of companies	935	540	1475
- %	63,4	36,6	100,0
<i>Characteristics of company bargaining (%)</i>			
- Information provision to the union	77,22	48,89	66,85
- Transmission of the company balance sheet to the union	10,16	2,04	7,19
- Presence of joint commissions	23,85	2,78	16,14
- Structural company compensation	9,30	17,04	12,14
- Production bonus	26,63	37,78	30,71
- Super minimum	5,67	9,63	7,12
- Lump sum bonus	28,66	24,63	27,19
- PRP/PFP: with additional lump sum bonus	9,09	-	5,76
- PRP/PFP: with delay clause	16,79	-	10,64
- PRP/PFP: Renewal	10,27	-	6,51
-- PRP/PFP: Replacement	5,03	-	3,19
-- PRP/PFP: Integration	5,24	-	3,32
- PRP/PFP: for the purpose of reductions in social contributions	10,91	-	6,92
- PRP/PFP: Implementation delay	1,71	-	1,08
- PRP/PFP: Revocation	0,32	-	0,20
- Work organisation	25,35	19,26	23,12
- Working-time	48,13	48,15	48,14
- Training:	25,13	8,89	19,19
<i>Those</i>			
-- with general formulation	20,86	6,67	15,66
-- with specific formulation	4,17	2,22	3,46
-- linked to changes in work organisation	2,57	1,11	2,03
-- linked to study-work programs	0,21	0,19	0,20
-- linked to the introduction of PRP/PFP	0,75	-	0,47

*Source: our calculation on IRESKO database.*

*Table 2: Distribution of PRP/PFP with reference to trade union category, local system and company size*

Trade union category	Total	Local system	Total	Firm size (employees)	Total
Food	124	Bologna	176	1-19	74
Chemicals	137	Ferrara	38	20-49	278
Commerce	52	Imola	22	50-99	206
Finance	16	Rimini	58	100-249	206
Building	49	Parma	98	250-999	119
Metalworking	484	Piacenza	21	1000 +	47
Printing	11	Reggio Emilia	182	nd	5
Textiles	56	Forlì	23		
Transport	6	Ravenna	45		
		Cesena	22		
		Modena	170		
		Outside ER	80		
<b>Total</b>	<b>935</b>		<b>935</b>		<b>935</b>

*Table 3: Distribution of indicators with respect to company size*

Company size (employees)	Indicators of Group I	%	Indicators of Group II	%	Indicators of Group III	%
1-19	26	35,62	42	57,53	5	6,85
20-49	111	32,46	206	60,23	25	7,31
50-99	106	33,44	185	58,36	26	8,20
100-249	122	29,12	247	58,95	50	11,93
250-999	89	37,55	127	53,59	21	8,86
1000 +	46	37,70	62	50,82	14	11,48
Nd	9	42,86	9	42,86	3	14,29
<b>Total</b>	<b>509</b>	<b>33,25</b>	<b>878</b>	<b>57,35</b>	<b>144</b>	<b>9,40</b>

*Table 4: Distribution of the agreements in accordance with the indicators*

Type	% Agreements with indicators of Group I	% Agreements with indicators of Group II	% Agreements with indicators of Group III	% Agreements with indicators of Group I & II	% Agreements without indicators
%	43,10	55,94	13,69	19,14	24,39

*Table 5: Consolidation and indicators group*

Group of indicators / Degree of consolidation in the companies		No	< 50%	>50%	Total
No. of Companies		711	92	132	935
%		76,04	9,84	14,12	100,00
% Companies without indicators (24,385%)		79,82	4,39	15,79	228
% Companies with indicators (75,615%)		74,82	11,60	13,58	707
Group of indicators	Denomination	No	< 50%	>50%	Total
<b>Total</b>		74,82	11,60	13,58	707
<b>I</b>	<b>Indicators of profitability</b>	78,16	9,93	11,91	403
<b>II</b>	<b>Indicators of productivity</b>	71,32	13,19	15,49	523
<b>III</b>	<b>Indicators of efficacy - efficiency</b>	62,50	16,41	21,09	128

**Table 6: Variability of flexible compensation with respect to company size**

Company size (employees)	Base	Min - Max	0 - Min - Max	0 - Max	Yes - No	Absolute	Index (*)	Coeff. of variation
<b>1-19</b>	31	19	11	6	2	5	0,32	1,05
<b>20-49</b>	81	94	49	29	11	14	0,37	0,84
<b>50-99</b>	48	69	48	23	5	13	0,41	0,74
<b>100-249</b>	31	75	50	37	8	5	0,45	0,61
<b>250-999</b>	17	45	30	14	1	12	0,46	0,64
<b>1000 +</b>	1	26	11	5	1	3	0,47	0,50
<b>nd</b>		2	1	2			0,54	0,42
<b>Total</b>	209	330	200	116	28	52	Average	
<b>Total (%)</b>	22,35	35,29	21,39	12,41	2,99	5,56	0,41	0,73

Legend

The term **Base** refers to lump sum bonus (in fixed amounts) and to the case in which the variable compensation is less than 5% with respect to a lump sum bonus (in fixed amounts).

The term **Min – Max** refers to a premium with a lower limit and an upper limit, for which anyway a fixed amount is distributed to the worker independently of his/her performance.

The term **0 - Min - Max** refers to a variable compensations system for which a given performance is required to obtain the premium, and subsequently the premium increase in an interval **Min – Max**.

The term **0 – Max** refers to a compensations system for which the premium is totally variable with the presence of an upper limit.

The term **Yes - No** refers to premium distributed only if a given performance is realised.

The term **Absolute** refers to a variable compensations system with limits not well defined.

The **Index** of variability of the bonus, presented in the table, was obtained on the basis of every typology of variability previously considered, going from no variability (Base), to maximum variability (Absolute) maximum.

**Graph 1: Value of variable compensation with respect to company size (%CCNL)**

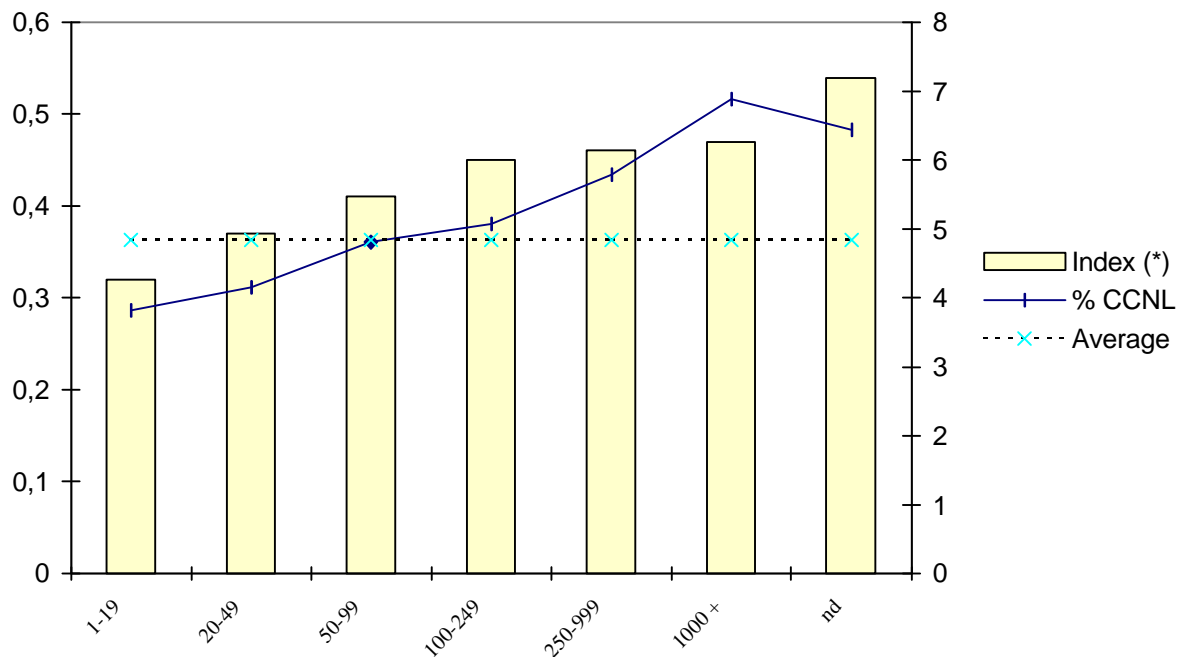


Table 7: Indexes with reference to trade union category

Trade union category	Participation	St. Dev.	Risk-sharing	St. Dev.	Traditional Incentivation	St. Dev.
<b>Food</b>	0,454	0,122	0,365	0,157	0,610	0,218
<b>Chemicals</b>	0,464	0,146	0,353	0,153	0,592	0,222
<b>Commerce</b>	0,427	0,129	0,466	0,171	0,499	0,195
<b>Finance</b>	0,415	0,101	0,508	0,141	0,500	0,134
<b>Building</b>	0,432	0,116	0,363	0,127	0,533	0,241
<b>Metalworking</b>	0,459	0,155	0,393	0,161	0,479	0,206
<b>Printing</b>	0,445	0,111	0,420	0,161	0,586	0,199
<b>Textiles</b>	0,421	0,132	0,407	0,126	0,545	0,193
<b>Transport</b>	0,323	0,060	0,567	0,170	0,457	0,147
<b>Total</b>	0,452	0,144	0,390	0,159	0,522	0,215

Table 8: Indexes with reference to firm size

Company size (employees)	Participation	St. Dev.	Risk-sharing	St. Dev.	Traditional Incentivation	St. Dev.
<b>1-19</b>	0,388	0,151	0,424	0,161	0,508	0,205
<b>20-49</b>	0,429	0,146	0,401	0,158	0,522	0,224
<b>50-99</b>	0,444	0,145	0,389	0,156	0,504	0,220
<b>100-249</b>	0,483	0,133	0,366	0,161	0,547	0,219
<b>250-999</b>	0,474	0,130	0,389	0,165	0,536	0,192
<b>1000 +</b>	0,517	0,132	0,376	0,145	0,495	0,195
<b>nd</b>	0,510	0,126	0,490	0,132	0,463	0,208
<b>Total</b>	0,452	0,144	0,390	0,159	0,522	0,215

Table 9: Indexes with reference to territorial areas

Local system	Participation	St. Dev.	Risk-sharing	St. Dev.	Traditional Incentivation	St. Dev.
<b>Bologna</b>	0,479	0,158	0,369	0,152	0,515	0,198
<b>Cesena</b>	0,433	0,114	0,514	0,147	0,533	0,234
<b>Ferrara</b>	0,509	0,133	0,299	0,158	0,572	0,213
<b>Forlì</b>	0,479	0,172	0,333	0,204	0,527	0,178
<b>Imola</b>	0,507	0,123	0,471	0,174	0,518	0,188
<b>Modena</b>	0,406	0,124	0,406	0,153	0,611	0,200
<b>Piacenza</b>	0,393	0,045	0,473	0,102	0,293	0,131
<b>Parma</b>	0,446	0,127	0,412	0,159	0,516	0,237
<b>Ravenna</b>	0,371	0,106	0,460	0,144	0,493	0,212
<b>Reggio E.</b>	0,472	0,163	0,338	0,151	0,504	0,221
<b>Rimini</b>	0,418	0,104	0,451	0,161	0,453	0,224
<b>Outside ER</b>	0,491	0,137	0,392	0,138	0,500	0,195
<b>Total</b>	0,452	0,144	0,390	0,159	0,522	0,215

*Table 10.1: Distribution of companies, database IMPERO.*

	<b>Distribution of companies with PRP/PFP</b>	
	<b>Total Manufacturing Industrial Companies</b>	<b>Examined Companies</b>
<b>Province of Emilia-Romagna</b>		
<b>Bologna</b>	26,73%	26,05 %
<b>Ferrara</b>	3,63%	3,66 %
<b>Forlì - Cesena</b>	5,94%	5,70 %
<b>Modena</b>	24,09%	24,97 %
<b>Piacenza</b>	4,51%	5,02%
<b>Parma</b>	9,57%	8,96%
<b>Ravenna</b>	5,17%	5,43 %
<b>Reggio Emilia</b>	18,15%	17,64%
<b>Rimini</b>	2,20%	2,58 %
<b>Total</b>	100,00%	100,00%
<b>Company size (employees)</b>		
<b>1 - 99</b>	51,38	51,70
<b>100 - 249</b>	32,89	32,97
<b>250 - 999</b>	13,86	13,03
<b>&gt; 999</b>	1,87	2,31
<b>Total</b>	100,00%	100,00%
<b>No. total of companies</b>	<b>909</b>	<b>737</b>

*Table 10.2: Distribution of industrial companies with PRP/PFP, database IRESKO.*

	<b>Distribution of companies with PRP/PFP</b>	
	<b>Total Manufacturing Industrial Companies</b>	<b>Examined Companies</b>
<b>Province of Emilia-Romagna</b>		
<i>Bologna</i>	21,49%	24,83%
<i>Ferrara</i>	4,30%	5,70%
<i>Forlì - Cesena</i>	4,53%	4,03%
<i>Modena</i>	19,63%	20,81%
<i>Piacenza</i>	2,44%	4,03%
<i>Parma</i>	10,34%	8,72%
<i>Ravenna</i>	4,30%	5,03%
<i>Reggio Emilia</i>	19,72%	22,15%
<i>Rimini</i>	5,35%	4,70%
<b>Outside Emilia-Romagna</b>	7,90%	-
<b>Total</b>	100,00%	100,00%
<b>Company size (employees)</b>		
<i>1 - 99</i>	60,39%	41,28%
<i>100 - 249</i>	22,88%	38,59%
<i>250 - 999</i>	11,85%	16,78%
<i>&gt; 999</i>	4,41%	3,35%
<i>n.d.</i>	0,47%	-
<b>Total</b>	100,00%	100,00%
<b>Trade union category</b>		
<i>Food</i>	14,40%	8,39%
<i>Chemicals</i>	15,91%	20,13%
<i>Building</i>	5,69%	4,36%
<i>Metalworking</i>	56,21%	58,72%
<i>Wood</i>	1,28%	1,01%
<i>Textiles</i>	6,50%	7,38%
<b>Total</b>	100,00%	100,00%
<b>No. total of companies</b>	<b>861</b>	<b>298</b>

**Table 11: Basic econometric analysis and variables of industrial relations(\*)**

	<i>Probit model</i>	<i>Probit model with t / t-1</i>	<i>Random effects Probit model with t / t-1</i>	<i>Probit model with annual dummies and t / t-1</i>	<i>Probit model only for PRP/PFP companies with indicators and t/t-1</i>	<i>Probit model with industrial relations variables and t/t-1</i>
	[1]	[2]	[3]	[4]	[5]	[6]
<b>Variables</b>						
<b>Constant</b>	-0.864**	-0.630**	-0.535**	-	-0.734**	2.713**
<b>D100_200</b>	0.381**	0.326**	0.351**	0.311**	0.355**	0.548**
<b>D200_500</b>	0.518**	0.505**	0.496**	0.495**	0.555**	0.154
<b>D500</b>	1.239**	1.167**	1.192**	1.132**	1.236**	0.922**
<b>SIND2</b>	-0.680**	-0.706**	-0.879**	-0.632**	-0.635**	-0.583**
<b>SIND4</b>	-0.643**	-0.449**	-0.973**	-0.325**	-0.584**	—
<b>DB</b>	0.449**	0.511**	0.473**	0.487**	0.423**	—
<b>DI</b>	-0.721**	-0.606**	-0.633**	-0.604**	-0.571**	—
<b>DJ</b>	—	—	—	—	—	-0.870**
<b>DK</b>	—	—	—	—	—	-0.926**
<b>DM</b>	0.267**	0.308**	0.174**	0.380**	0.343**	-0.453**
<b>DN</b>	-0.324**	-0.331**	-0.765**	-0.193**	-0.637**	-0.780**
<b>DMO</b>	0.171**	0.134**	0.174**	0.131**	0.124**	-1.302**
<b>DRE</b>	0.493**	0.377**	0.371**	0.378**	0.307**	-1.371**
<b>DFE</b>	0.754**	0.722**	0.681**	0.743**	0.728**	—
<b>DRN</b>	1.211**	1.210**	1.283**	1.207**	1.272**	-0.453**
<b>DPR</b>	—	—	—	—	—	-2.144**
<b>DBO</b>	—	—	—	—	—	-1.687**
<b>HHS</b>	-2.771**	-5.216**	-0.204**	-6.306**	-4.664**	-5.177**
<b>MT</b>	0.00013*	0.00013	-0.00000008	0.00010	0.0001**	-0.000217
<b>TCVAK</b>	0.0010**	0.0008**	0.0009	0.00078**	0.00081**	-0.001144
<b>KL</b>	0.130**	0.136**	0.0021	0.129**	0.123**	0.0756
<b>PROD1K</b>	-0.0021**	-0.0035**	-0.000047	-0.0030**	-0.0033**	-0.0032**
<b>TCPROD1K</b>	0.0012	0.00071**	0.00064	0.00078**	0.00087**	0.00087**
<b>WAGEPK</b>	0.0085**	0.0059**	0.00007**	0.0082**	0.0047**	0.0148**
<b>TCCLUP1K</b>	0.0011*	0.0023**	0.00165	0.0021**	0.00063**	-0.0022**
<b>TCFINBURD</b>	0.0007**	0.0005*	0.00058	0.00045*	0.00092**	-0.00007
<b>D91</b>	—	—	—	-0.623**	—	—
<b>D92</b>	—	—	—	-0.622**	—	—
<b>D93</b>	—	—	—	-0.641**	—	—
<b>D94</b>	—	—	—	-0.846**	—	—
<b>D95</b>	—	—	—	-1.104**	—	—
<b>INFO</b>	—	—	—	—	—	0.165
<b>WOB</b>	—	—	—	—	—	0.206**
<b>WTB</b>	—	—	—	—	—	-0.335**
<b>ON-JT</b>	—	—	—	—	—	0.274**
<b>JC</b>	—	—	—	—	—	0.825**
<b>BALSH</b>	—	—	—	—	—	0.582**
<b>SC</b>	—	—	—	—	—	-0.788**
<b>PB</b>	—	—	—	—	—	-0.871**
<b>SM</b>	—	—	—	—	—	-0.873**
<b>LSB</b>	—	—	—	—	—	-0.568**
<b>No. of observations</b>	3685	3327	3327	3327	3127	1447
<b>Chi2</b>	433.98	369.04	92.67	-	364.46	375.82
<b>-Log Likelihood</b>	2217.39	1915.84	-	1890.21	1693.74	490.80
<b>Pseudo R2</b>	0.108	0.103	-	-	0.112	0.347

(\*) Method of estimation: robust PROBIT (\* significant at 90%, significant at 95%).

Table 12: Econometric analysis of company bargaining

Variables	[8.1]* Part.on Index	[8.2]^ Part.on Index > 0,5	[8.3]^ Part.on Index > average	[8.4]^ Ind. Gr. III	[9.1]* Risk- sharing Index	[9.2]^ Risk- Index > average	[9.3]^ Ind. Gr. I	[10.1]* Inc.on Index	[10.2]^ Inc.on Index> average	[10.3] ^ Ind. Gr. II
Constant	0.430**	-1.098**	-1.115**	-1.522**	0.394**	0.988**	0.487**	0.338**	-1.350**	-1.989**
D100	-	-	-	-	0.0644	-0.0664	-0.118	-	-	-
D100_200	-	-	-	-	-	-	-	-	-	-
D200_500	0.023**	0.177*	0.321**	0.292**	-	-	-	0.015	0.025	-0.285**
D500	0.017	0.018	0.084	0.406*	0.080**	0.884**	1.095**	-0.114**	-0.521**	-2.247**
Trade union dummies	3 Signif.	3 Signif.	3 Signif.	2 Signif.	2 Signif.	2 Signif.	2 Signif.	3 Signif.	3 Signif.	3 Signif.
Sector dummies	5 Signif.	5 Signif.	5 Signif.	5 Signif.	5 Signif.	4 Signif.	5 Signif.	3 Signif.	3 Signif.	3 Signif.
Local system dummies	6 Signif.	6 Signif.	6 Signif.	6 Signif.	7 Signif.	7 Signif.	7 Signif.	7 Signif.	7 Signif.	7 Signif.
INFO	0.031**	0.038	0.065	0.211*	-	-	-	-	-	-
WOB	0.006	0.174**	0.236**	0.501**	-0.020**	-0.177*	-0.356**	-	-	-
WTB	-0.012*	-0.053	0.065	-0.114	-	-	-	-	-	-
ON-JT	-	-	-	-	-	-	-	0.032**	0.0057	0.143
ON-JT G	-	-	-	-	-	-	-	-	-	-
ON-JT S	0.088**	1.449**	0.817**	0.441**	-0.091**	-1.766**	-1.192**	-	-	-
ON-JTWOB	-	-	-	-	-	-	-	-0.035	0.080	0.377*
OUT-JT	0.071*	-	-	-	-	-	-	-0.119**	-	-
ON-JTPR	-	-	-	-	0.117**	-	-	0.211**	-	-
JC	-	-	-	-	0.0217**	0.344**	-0.467**	-	-	-
BALSH	0.022**	0.133	0.098	0.143	0.0170	0.297**	0.557**	-0.098**	-0.515**	-0.936**
SC	-0.048**	-0.627**	-0.260*	0.410**	-	-	-	-0.069**	-0.662**	-0.510**
PB	-0.014*	-0.133	-0.246**	-0.477**	-	-	-	-	-	-
SM	-0.029*	-0.268	0.287	-0.590**	0.060**	1.028**	0.247	-	-	-
LSB	-0.028**	-0.289**	-0.221**	-0.518**	-0.053	0.0075	-0.034	-0.040**	0.085	-0.029
PRODIK	-0.002**	-0.002**	-0.002**	-0.0011	0.0005	0.00175	0.00138	-0.0017	-0.0015	0.0025**
TCICAP	0.0017**	0.0031**	0.0021**	0.00083	-	-	-	0.0028**	0.0012	0.00073
IMTECK	6*10 <sup>-6**</sup>	4*10 <sup>-6**</sup>	2*10 <sup>-6</sup>	1*10 <sup>-6</sup>	-	-	-	-	-	-
TCPRODIK	4*10 <sup>-4**</sup>	4*10 <sup>-4**</sup>	6*10 <sup>-4**</sup>	0.0023	0.00051	0.00084	0.00057	-	-	-
MT	0.0003**	-0.00004	0.00009	-0.0011**	0.00032	5,5*10 <sup>-4**</sup>	6,1*10 <sup>-4**</sup>	-	-	-
WAGEPK	-0.0056*	-0.0066	-0.0009	-0.0058	-	-	-	-	-	-
TCWAGEPK	0.0002**	0.0003	0.0004**	0.00017	-	-	-	-	-	-
TCONFINK	-	-	-	-	6*10 <sup>-4**</sup>	9,3*10 <sup>-4**</sup>	0.00054	-	-	-
AMBES	-	-	-	-	-0.048	1.558**	-3.700**	-	-	-
AMBCON	-	-	-	-	-0.041	-3.508**	7.697**	-	-	-
FINDEB	-	-	-	-	0.027*	0.0329**	0.0107	-	-	-
TCFINDEB	-	-	-	-	0.00089**	-0.00004	0.00103**	-	-	-
TCVAK	-	-	-	-	-0.0047**	-0.0088**	-0.0121**	-	-	-
CLK	-	-	-	-	-1*10 <sup>-5**</sup>	-6*10 <sup>-6</sup>	-1,8*10 <sup>-4**</sup>	-	-	-
TCCLK	-	-	-	-	0.00474**	0.00452**	-0.0320**	-	-	-
TCIMTECK	-	-	-	-	-	-	-	0.0046*	0.0044**	0.0054**
CLUP2K	-	-	-	-	-	-	-	0.0022**	0.0003	0.0041**
TCCLUP2K	-	-	-	-	-	-	-	-1*10 <sup>-3**</sup>	-0.0097**	-0.0036*
TCROE	-	-	-	-	-	-	-	0.003**	0.0019**	0.0035**
No. of observations	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490
Chi 2	-	433.97	367.44	262.58	-	344.19	299.80	-	370.86	333.63
Log Likelihood	1066.29	-745.39	-839.52	-578.11	1073.25	-801.80	-481.01	428.68	-825.06	-694.67
R2 Adj./Pseudo R2	0.267	0.256	0.180	0.188	0.185	0.214	0.249	0.240	0.192	0.203

(\* ) Method of estimation: OLS corrected for heteroschedasticity (\* significant at 90%, significant at 95%).

(\*\* ) Method of estimation: robust PROBIT (\* significant at 90%, significant at 95%).



**Table 13: Legend**

<b>Variables</b> <sup>1</sup>	<b>Denomination</b>
<b>EMPL</b>	Number of employees
<b>SALES</b>	Annual sales
<b>VA</b>	Value added
<b>MT</b>	Technical margin: gross operative margin / net investment
<b>ROE</b>	Return on equity
<b>PROD1(2)</b>	Labour productivity: value added (or sales)/ employees
<b>IMTEC</b>	Net investment
<b>CL</b>	Labour-cost: value added - gross operative margin
<b>WAGEP</b>	Gross compensation: labour cost / employees
<b>ICAP</b>	Capital intensity: net investment / employees
<b>KL</b>	Capital-labour ratio: net investment / labour cost
<b>CLUPI(2)</b>	Labour-cost per unit of output: labour cost / labour productivity
<b>FINDEBT</b>	Financial debt: financial burden /net assets
<b>FINBURD</b>	Financial burden
<b>HHS</b>	Herfindhal Index
<b>AMBCON AMBESP</b>	Value of the estimated coefficient if < 0 (if > 0) in the regression of the company performance over the time trend, 0 otherwise
<b>INFO WOB WTB JC BALSH</b>	Information provision; bargaining on work organisation; bargaining on working-time; presence of joint commission; transmission of the company balance sheet to the union
<b>ON-JT ON-JTG ON-JTS ON-JTWOB OUT-JT ON-JTPR</b>	Bargaining on training; Bargaining on training only on general principles/lines; Bargaining on training on specific principles/lines; Bargaining on training linked to changes in work organisation; Bargaining on training linked to study-work programs; Bargaining on training linked to the introduction of PRP/PFP
<b>SC PB SM LSB</b>	Structural company compensation; production bonus; super minimum; lump sum bonuses
<b>D50 D50_100 D100_200 D200_500 D500</b>	Number of employees: < 50; 50-99; 100-199; 200-499; > 499
<b>DA</b>	Food, Beverages and Tobacco (ISDB Oecd code: FOD)
<b>DB</b>	Textiles and Clothing (ISDB Oecd code: TEX)
<b>DC</b>	Leather Industries (ISDB Oecd code: TEX)
<b>DD</b>	Wood and wood products (ISDB Oecd code: WOD)
<b>DE</b>	Paper and paper products, printing and publishing (ISDB Oecd code: PAP)
<b>DF</b>	Petroleum and coal (ISDB Oecd code: CHE)
<b>DG</b>	Chemical products (ISDB Oecd code: CHE)
<b>DH</b>	Rubber and plastic products (ISDB Oecd code: CHE)
<b>DI</b>	Non-metallic mineral products (ISDB Oecd code: MNM)
<b>DJ</b>	Metal products, except machinery and transport equipment (ISDB Oecd code: BMA)
<b>DK</b>	Machinery and equipment (ISDB Oecd code: MEC)
<b>DL</b>	Electrical goods and office machines (ISDB Oecd code: MEL and MIO)
<b>DM</b>	Transport equipment (ISDB Oecd code: MTR)
<b>DN</b>	Other manufacturing industries (ISDB Oecd code: MOT)
<b>SIND1 SIND2 SIND3 SIND4 SIND5 SIND6</b>	Trade union category dummies: food (DA); textile (DB, DC); building (DD, DI); printing (DE); chemicals (DF, DG, DH); metalworking (DK, DL, DM, DN)
<b>DRN DFO DRA DFE DBO DMO DRE DPR DPC</b>	Province dummies: Rimini; Forli-Cesena; Ravenna; Ferrara; Bologna; Modena; Reggio Emilia; Parma; Piacenza

Note: 1) In tables 11 and 12, where the denomination of the variables includes the capital K, this means that the variables are taken in real terms, while TC before the denomination means that the variables are expressed at the rate of change.